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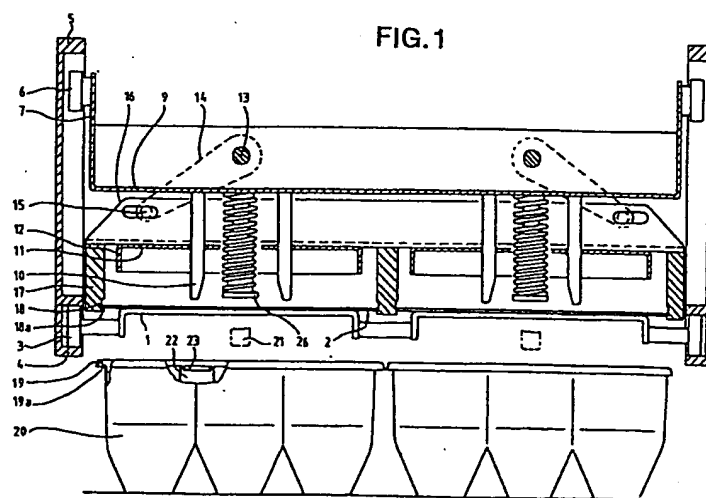
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54 Device for attaching a closing wall to a package.

57 Device and method for attaching a closing wall (2) to a package (20), in which said closing wall is shifted in two opposing grooves (18) having narrow lower rims (18a) and is then pressed by a pressing means over said rims unto the

package, which grooves serves the purposes of guiding the closing wall toward an attaching station and supporting it in said station. Further a device for automatically adhering the closing wall to protrusions of the package is shown.



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Device for attaching a closing wall to a package.

The invention relates to a device and method for attaching a closing wall such as a cover to a package, provided with a store room for closing walls, a delivery device for delivering a closing wall to an attaching station, ^{and} a supporting means for supporting said closing wall in the attaching station, which has a pressing means to press said closing wall into said package.

Such devices and methods are known for instance from the United States Patent Specification 3,583,347 to Whitten. In this publication closure members are supported by magnetic means before they are pressed unto a package. This is favourable in that sense, that the edges and the side of the closure wall directed toward the package are completely free. A disadvantage is, that the closure member has to contain ferro-magnetic material. The closure members are delivered from a store room, put on two opposing guides each having a horizontal flange and a vertical flange and are shifted on said guides until they are magnetically attracted when moving beyond the end of the guides.

The United States Patent Specification 1,850,486 to Wessman, describes a device in which caps are delivered from a store room to retaining spring clips. When held by these clips they may be pressed on a receptacle. The disadvantage of this system is that the caps have to be brought into the clips and that the clips do not exactly define the position of the caps, when hold by said clips.

Further United States Patent Specification 3,408,787 to Mueller, shows a device and method for applying a cover to a container, in which a suction cap is used to support a cover for moving it from a store room of covers toward the location where they are pressed upon the container. This system has the disadvantage that not every cover material has a surface that allows for a sufficient suction adhesion to a suction cap, whereas further a rather complicated drive for the suction cap is necessary.

It is an aim of the invention to provide a device of the indicated type, that is simple and reliable and consequently may have a reduced price and relatively high working speed.

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- 5 A further aim is to provide a device for attaching a closing wall to a package in which the means for guiding a closing wall when moving from a store room to an attaching station partly are the same as the means for supporting the closing wall in said station.
- 10 Still a further aim of the invention is to provide a simple and reliable device for attaching a closing wall to a package, which is not dependent on magnetic or surface characteristics of the closure wall to support it in the attaching device.
- 15 The above aims are attained according the invention by providing that the supporting means has two parallel grooves having each a wall and a supporting rim, said walls of the two grooves facing each other and said pressing means being
- 20 mounted for moving along a track perpendicular to the plane through said rims, the parts of the pressing means which are nearest to said rims being located at some distance from said rims, said rims being so narrow and said distance being such, that the pressing means press a closing wall engaging
- 25 said rims over said rims in order to be connected to a package.

It is remarked that the United States Patent Specification 2,587,180 to Lindstrom shows a capping machine in which a

30 circular cap at its circumference is supported on shoulders and bent by a pressing member, so that it slips over the shoulders supporting it. The device for bringing the caps in the position in which they can be pressed unto the container provides for bringing the caps in spring clips,

35 then moving them from the spring clips onto the shoulders, bending them slightly and finally attach them to the container. Apart from the complexity of this device it is remarked that spring clips do not positively support the caps but retain them by frictional engagement with their edge, which is less

40 reliable than the rims of the invention which positively

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support the closing wall.

Preferably it is provided that the grooves extend in said attaching station and are open at one side, said delivery
5 device being adapted to insert a closing wall in said grooves at their open ends, said walls of the grooves forming guides for guiding a closing wall, when inserted in said grooves and when moved by said delivery device toward the attaching station.

10

An easy entrance of the closing walls into the grooves can be realized by providing that the said walls of the grooves are chamfered at said open ends.

15 In order to adapt the device to variations in the width of the closing walls, which variations may originate from production tolerances or from the use of closing walls of a somewhat differing shape or dimensions, it is provided according to a further elaboration of the invention that at
20 least one of said grooves is mounted resiliently in the direction away of the opposing groove.

Normally a device of the type of the invention is provided with a conveying device for supplying packages to said
25 attaching station and after receipt of a closing wall remove them from said attaching station, as is known per se, for instance from the cited United States Patent Specification 3,583,347 to Whitten. A simple combination of the pressing means of the invention with the conveying device is according
30 to a further elaboration of the invention obtained by providing that said pressing means is provided with a stop and is adapted to occupy three positions, in the first of which the stop is outside the reach of a package in the conveying device, and in which the pressing means is free
35 of the closing wall held in said grooves, in the second of which the stop is within the reach of the package in the conveying device but the pressing means still is free of a closing wall and in the third of which the stop is still within the reach of the package in the conveying device
40 but the pressing means engages a wall held in said grooves.

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Packages having protrusions with upper surfaces that reach
unto the closing wall, the closing wall being adapted to be
adhered to said protrusions by a suitable tool are known
from practice, for instance for egg boxes. Up till now this
5 connection between the closing wall and the protrusions
was made by hand. It is a further aim of the invention to
provide a device for doing this fully automatically, by
procuring a device having a pressing means which is provided
with styles adapted to press parts of said closing wall
10 through the upper surface of said protrusions to connect
said parts to said protrusions.

Finally the invention provides a method for applying a
closing wall to a package having a circumferential edge by
15 pressing said closing wall into said edge, which is
characterised in that said closing wall is shifted through
two opposing parallel grooves having at one side a narrow
retaining rim, a pressure means being moved perpendicularly
to the plane of said grooves toward said closing wall in
20 said grooves, which pressure means engages said closing wall
at some distance from said narrow rims, flex said closing
wall a little, let it slip over said rims and press it in
one movement into said edge of the package.

25 In the following the invention is further elucidated on
hand of the drawing, in which:-

Figure 1 shows a cross-section over the line I-I of figure 2
through a device according the invention,
30 Figure 2 shows a cross-section, partly in view of the device
of figure 1,
Figure 3 corresponds to figure 1, but in a further stadium
of the working of the device,
Figure 4 corresponds to figure 2 in the stadium of figure 3,
35 Figure 5 corresponds to figures 1 and 3, but in still a
further stadium of the working of the device;
Figures 6 and 7 elucidate a detail in vertical cross-section
and in plan view respectively,
Figure 8 shows in a view corresponding to figure 2 details
40 of a second embodiment of the invention,

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Figure 9 is a plan view of figure 8,

Figure 10 shows part of the embodiment of figure 8 in a further stadium,

Figure 11 shows a detail of figure 10 in still a further stadium, and

Figure 12 shows another detail of the second embodiment.

In the drawing reference 1 indicates a carriage, which in figure 2 can move from the left to the right and again from the right to the left and which by means of small elevations 1a at its left rim can take along the lowermost sheet 2 of a stack of sheets 2a (vide also figures 6 and 7). In the shown embodiment two suchlike stacks are located the one besides the other and consequently one has two sheets 2 which have already been taken away from the stack.

At the lower side of a wall 32 of a store room for the stack 2a a pawl 31 is freely rotatable about a horizontal pin. When the sheet 2 is in the position indicated in figures 6 and 7 and the carriage 1 moves back toward the left the pawl 31 prevents that the sheet 2 is moved backward again and determines exactly the position of the left border of the sheet.

The carriage 1 runs on wheels 3 which again can run on a support 4 which is part of the frame of the machine.

Also connected to this frame are a set of vertical guides 5 which face each other and in which guide wheels 6 may run. These guide wheels support plates 7 which are connected to each other by means of an U-shaped body having upstanding walls 8 and a bottom wall 9. At the lower side of the bottom styles 10 have been mounted which have a cylindrical cross-section with a tapering at the lower side as clearly is visible in the drawing. To these styles a plate 11 is connected having cornered edges 12 which serve the purpose of a pressing member.

In the upstanding parts 8 of the U-shaped support body 8,9 shafts 13 are mounted which bear pivot arms 14, which at

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- their ends bear pins 15 which protrude into a horizontal slit in a support member 16. This support member has at its edges downwardly protruding parts 17 which at their lower side have a shallow groove 18 with there below a low and narrow support rim 18a. The cardboard sheet 2, which serves the purpose of a closing wall of a package, as will be described further on, is supported in two opposing grooves 18 and bears on two opposing narrow rims 18a.
- 10 Further an egg's package 20 of a type known per se is present having an edge 19, which has an outwardly bent support rim 19a. Further this egg's package has upwardly directed protrusions 22 which at their upper side have a recessed upper wall 23. To the support member 17 further a stop 21
- 15 is attached.

- Starting from the position indicated in figures 1 and 2, in which two cardboard closing walls 2 are located in the related shallow grooves of the support members 17 a downwardly movement of the wheels and the parts 7,8 and 9 connected to them is carried out after the carriage 1 has been returned in the position shown in figure 2. By reason of this the shafts 13 move downward and consequently the arms 14 and finally the supports 17. This continues in this
- 20 way until the stop 21 is at the level of the edge 19 of a package 20, after which a finger 25 causes the package to shift along the support surface 24 until the edge 19 engages the stop 21. By reason of this the package, which is also guided in the direction perpendicular to figure 2,
- 25 is located at an exactly defined position with respect to the closing wall 2 and the members supporting it.
- 30

- If now a further lowering occurs of the wheels 6 and the members attached to them the support members 17 become to bear upon the edge 19 by reason of which the pins 15 slide in the slits in the plates 16, wherewith consequently the styles 10 and the pressing member 12 move with respect to the support members 17 with the grooves 18. Therewith the edges of the closing walls 2 are pressed over the supporting rims 18a until upon the support rim 19a of the
- 35
- 40

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edge of the package, which is very well possible because a certain distance exists between the lower side of the pressing member 12 and the location where the closing wall bears upon the narrow support rim 18a.

5

The sheets 2 are provided with undercut tongues, which can be pressed through the recessed upper wall parts 23 of the protrusions and are hooked therebehind.

10 In the mean time the lower side 26 of a sleeve 27 which is guided by means of a pin 28 having a narrower upper side 29 has engaged the closing wall 2 under influence of a pressure spring 30 wherewith this spring 30 is compressed somewhat.

15 When the pressure member and the styles 10 move upwardly again, these springs 30 see to it that the closing wall is not taken along backwardly.

20 After this the wheels 6 move further upwardly, by reason of which the stop 21 comes out of the reach of the packages and these can be carried away by a horizontal movement of the pushing finger 25.

25 It will be clear, that for application of the invention it is necessary that the closing walls 2 are supported above the packages, but in such a way that their edges at the lower side are completely free to be pressed into the packages. This can happen, as has been elucidated in the shown embodiment, by letting the closing walls bear upon
30 the narrow support rims 18a.

As will be clear from the above the invention provides a simple construction which makes it possible to provide fully automatically packages of the shown type with a cover
35 after they have been filled. The device according the invention occupies only a very restricted room and gives a reliable working as practice has shown.

The pushing finger 25 serves to move the package forward,
40 also in a preceding non shown filling station in which the

package is time and time again shifted over the distance of 0089090
a row of egg receiving packets and in many cases over a
greater distance when stepping over to a new package. By
reason of this the time available for application of a
5 sheet 2 is limited. In this connection it is an advantage
of the invention, that, after the carriage has been driven
back, the downward movement of the pressing member until
the stop 21 is located in the track of movement of the edge
19 of the package 20 can occur simultaneously with the
10 final portion of horizontal movement of the finger 25 and
consequently of the package 20. When the package 20 has
been provided with a sheet 2 it can, however, be shifted
without being subjected to hindrance or retardation by
stop 21.

15

The embodiment of the invention shown in figures 8-12
inclusive allows for restricted variation in the width or
the length of the sheets 2. By reason of this it is possible
to handle closing walls of slightly deviating dimensions,
20 for instance if egg packages are used for the same number of
eggs but with minor variations in type causing also minor
variations in closing wall dimensions. A further advantage
of this embodiment is, that with very limited jamming forces
very accurate positioning of the closing walls is possible.

25

As shown in figures 8-12 carriage 1 is provided with tilting
tongues 1' whereas one of the supports indicated with
reference 17' is pivotable about a pivot 33. A tension spring
35, schematically indicated with a dash-dot line in figure
30 12, urges support 17' against a stop member 34. By reason of
this support 17' normally is in the position indicated with
solid lines in figure 12. If, however, a closing wall 2
(vide figure 9) having a somewhat greater width than the shown
closing wall 2 would be substituted for this closing wall 2,
35 the broader wall will force support 17' into the position
shown with interrupted lines in figure 12. Spring 35 is so
dimensioned, that a limited friction force is exerted on
such a broader closing wall, without causing the sheet
material of this wall to bulge. A chamfered shape of the

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bottom of groove 18, as indicated with 18' in figure 9
or tapered corners of the closing wall indicated in figure 9
allow for an easy movement of support 17'.

5 As more particularly elucidated in figures 10 and 11 the carriage
1 may move somewhat further to the right until in the position
of the tongues 1' that is indicated with interrupted lines in
figure 10. When the carriage moves afterwards backward to the
left the closing wall 2 will move backward until it engages
10 pawl 31. Then tongues 1' are bent somewhat downwardly and/or
the closing wall is somewhat lifted, as shown in figure 11.
The expenditure of the movement of carriage 1 beyond the final
position of the closing wall 2, together with the movement back
and the yielding of tongue 1' or the small lifting of closing
15 wall 2 allows for a very accurate positioning of this wall,
also if it has a slightly deviating length.

Consequently this second embodiment allows for handling of
sheets or closing walls of deviating dimensions and even to
20 handle a closing wall of a somewhat different type and
dimensions without adjustment of the carriage movement or
the supports 17 or 17'. Further the positioning of the sheets
or closing walls is very accurate, even at high working
speeds of the machine. Finally the frictional force exerted
25 by supports 17 and 17' on these sheets or walls is very
limited and hardly dependent on small deviations in the
sheet's width.

The references indicated in the appending claims only serve
the purpose of elucidation. In no way they are intended or
can be interpreted as a limitation of the said claims.

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Claims:

1. Device for attaching a closing wall (2), such as a cover, to a package (20), provided with a store room (32) for closing walls, a delivery device (1,1a) for delivering a closing wall to an attaching station (5-18)^{and} a supporting means (17,17') for supporting said closing wall (2) in the attaching station, which has a pressing means (11,12) to press said closing wall unto said package, characterised in that said supporting means has two parallel grooves (18), having each a wall and a supporting rim (18a), said walls of the two grooves facing each other and said pressing means being mounted for moving along a track perpendicular to the plane through said rims, the parts (12) of the pressing means which are nearest to said rims being located at some distance from said rims (18a), said rims being so narrow and said distance being such, that the pressing means press a closing wall engaging said rims over said rims in order to be connected to a package.
2. Device according to claim 1, characterised in that said grooves extend in said attaching station and are open at one side, said delivery device (1,1a) being adapted to insert a closing wall in said grooves at their open ends, said walls of the grooves forming guides for guiding a closing wall, when inserted in said grooves and when moved by said delivery device toward the attaching station.
3. Device according to claim 2, characterised in that the said walls of the grooves are chamfered at said open ends.
4. Device according to any of the preceding claims, characterised in that at least one of said grooves is mounted resiliently in the direction away of the opposing groove.
5. Device according to any of the preceding claims, provided with a conveying device (24,25) for supplying packages to said attaching station and after receipt of a closing wall remove them from said attaching station, characterised in that said pressing means is provided with a stop (21) and

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is adapted to occupy three positions, in the first of which the stop is outside the reach of a package in the conveying device, and in which the pressing means is free of the closing wall held in said grooves, in the second of which the stop
5 is within the reach of the packages in the conveying device but the pressing means still is free of a closing wall and in the third of which the stop is still within the reach of the packages in the conveying device but the pressing means engages a wall held in said grooves.

10

6. Device according to any of the preceding claims, characterised in that said delivery device (1,1a,1') is provided with a member (1a) to push a closing wall into said grooves, said delivery device being further provided with an abutment
15 member (1') adapted to engage a closing wall when the delivery device moves backward a pawl (31) being present to prevent backward movement of a closing wall together with said delivery device, said abutment member (1') being yieldably mounted with respect to a closing wall, such that
20 it can move a closing wall backward until it is stopped by said pawl and after this does not further move said closing wall backward.

7. Device for attaching a closing wall to a package, said
25 package having protrusions (22) having upper surfaces (23) reaching unto the closing wall, provided with a pressing means (10,11,12) for pressing a closing wall unto said package, characterised in that said pressing means is provided with styles (10) adapted to press parts of said closing
30 wall through the upper surface (23) of said protrusions to connect said parts to said protrusions.

8. Method for applying a closing wall to a package having a circumferential edge by pressing said closing wall into
35 said edge, characterised said closing wall (2) is shifted through two opposing parallel grooves (18) having at one side a narrow retaining rim (18a), a pressure means being moved perpendicularly to the plane of said grooves toward said closing wall in said grooves, which pressure means
40 engages said closing wall at some distance from said narrow

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rims, flex said closing wall a little, let it slip over
said rims (18a) and press it in one movement into said
edge (19) of the package (20).

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FIG. 1

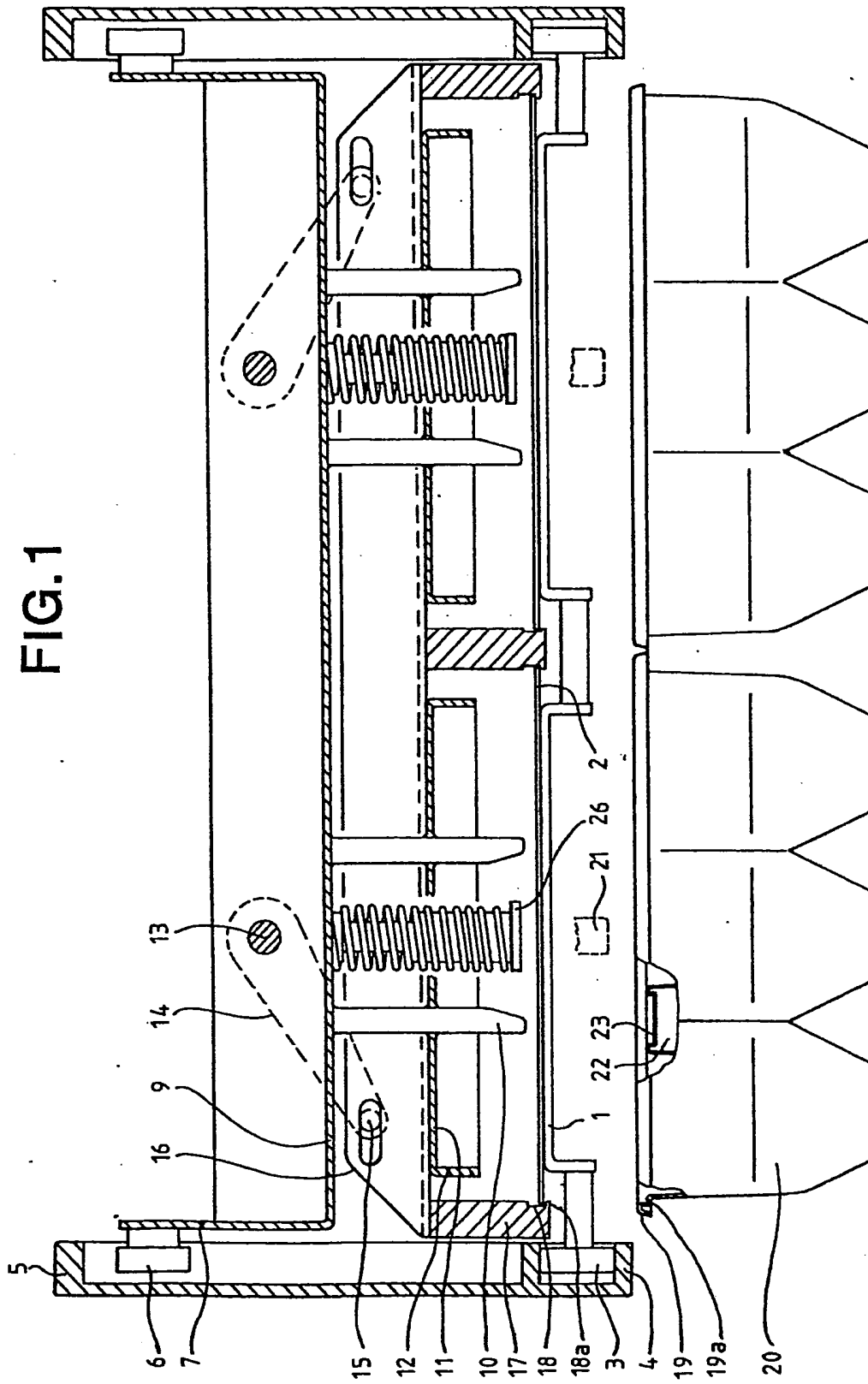


FIG.2

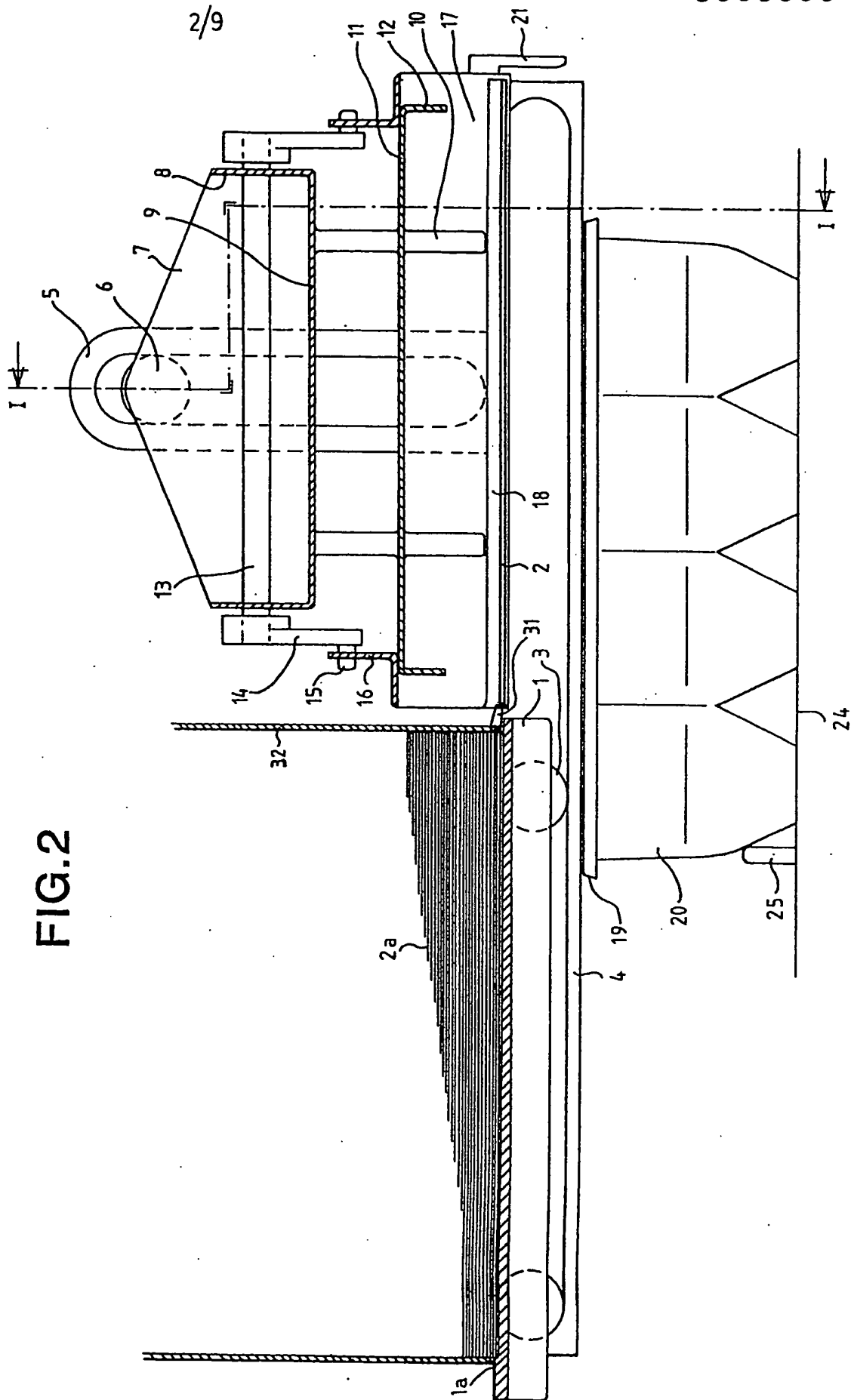


FIG.3

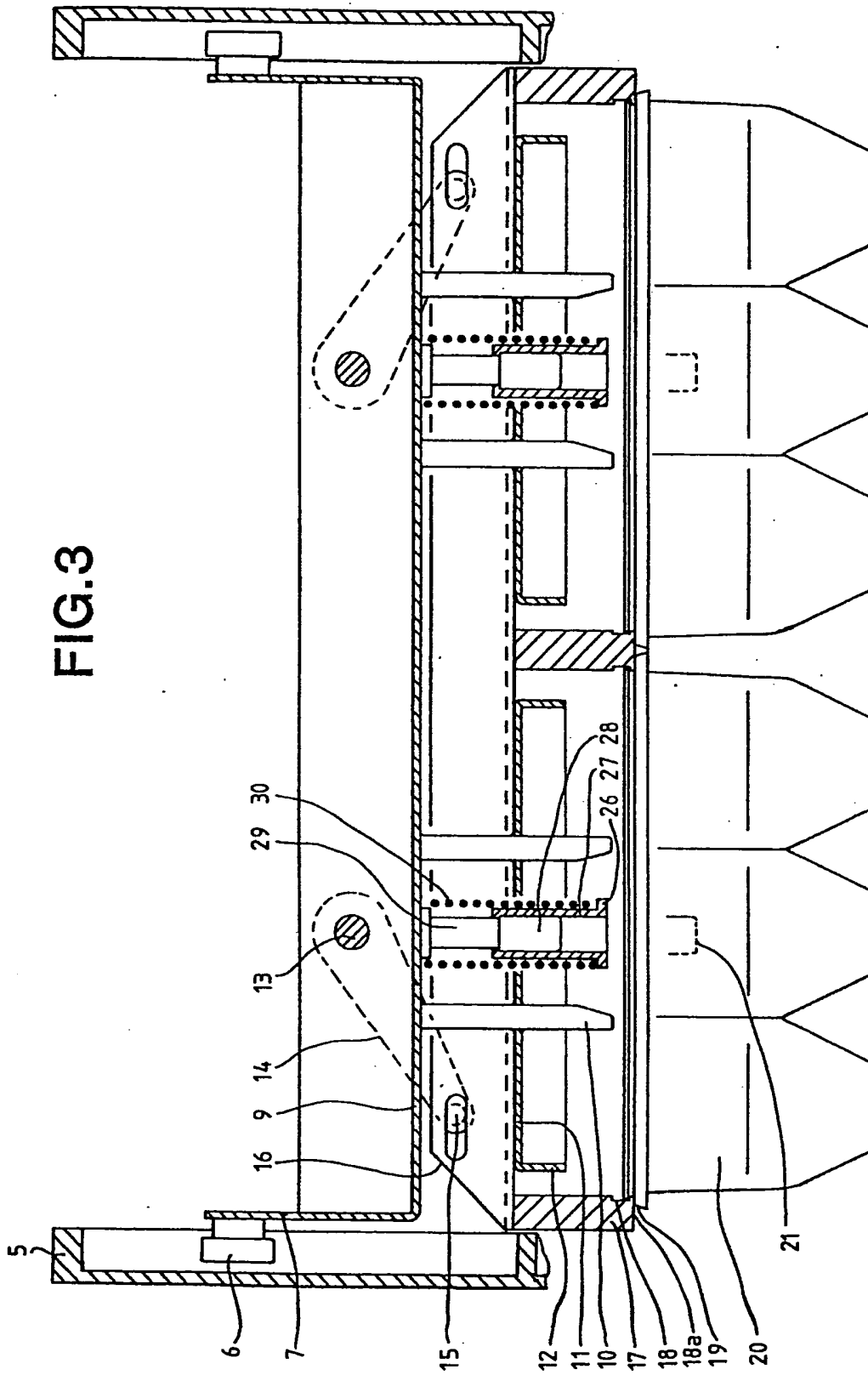
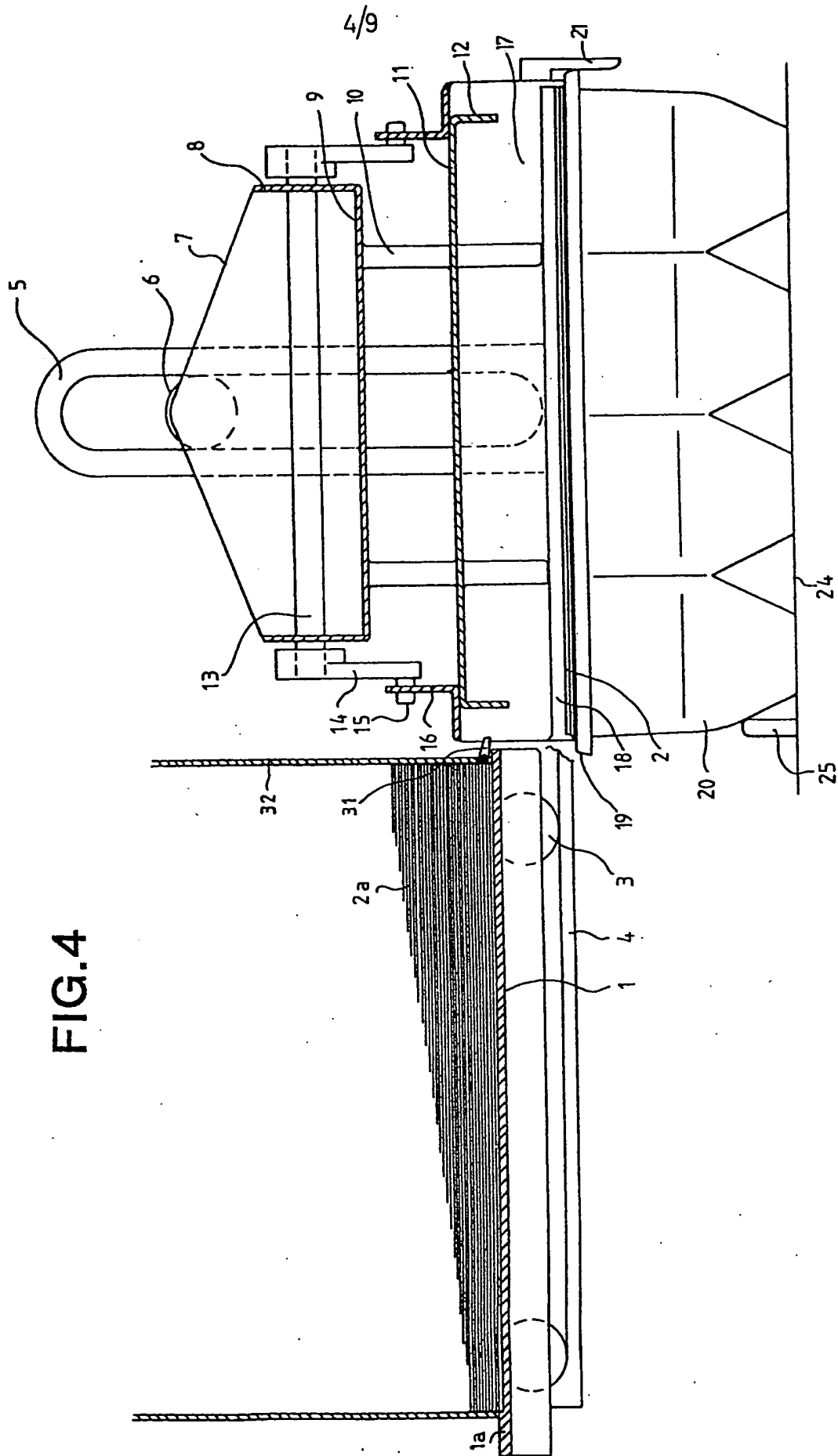


FIG. 4



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FIG.5

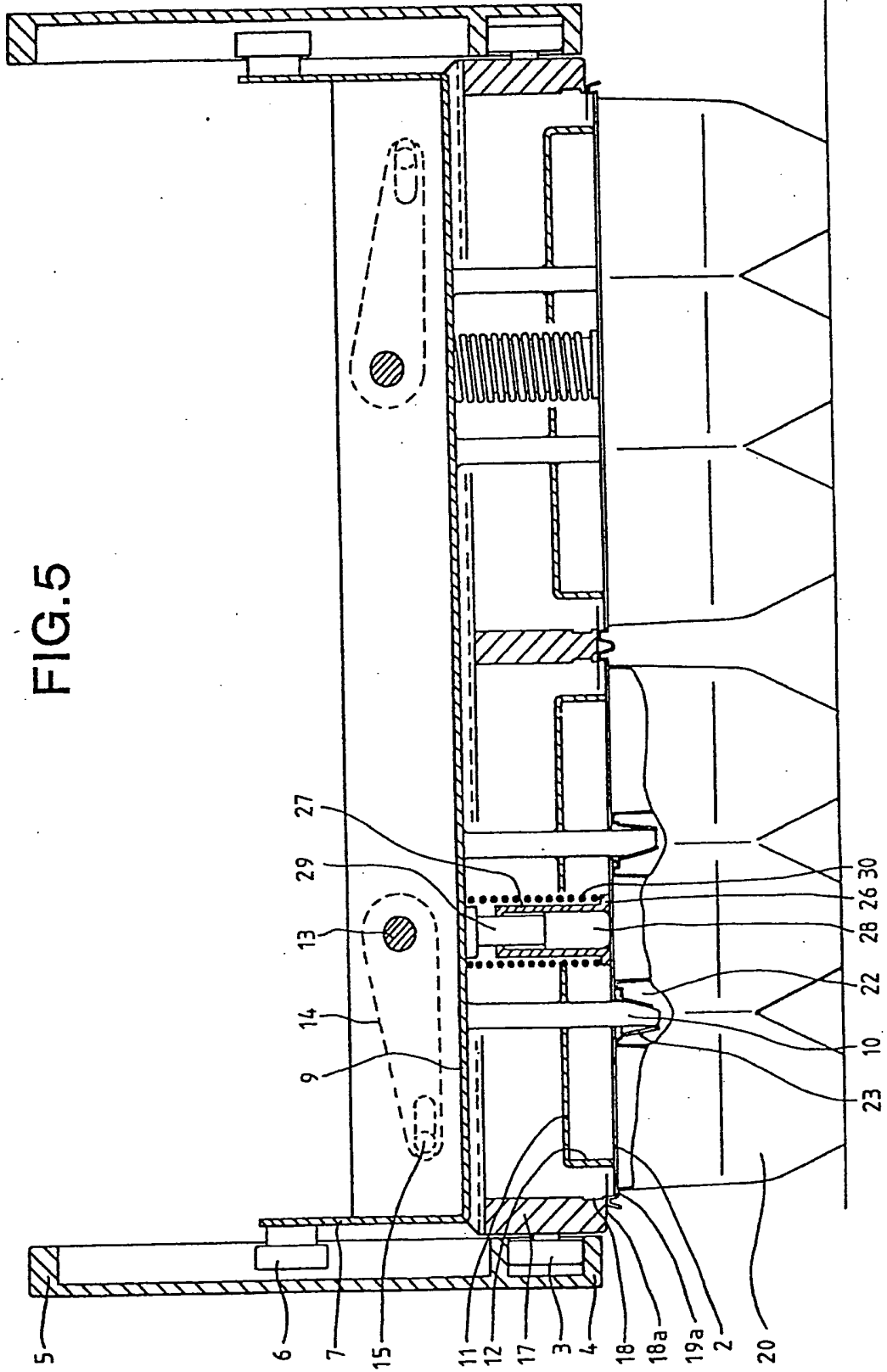


FIG. 6

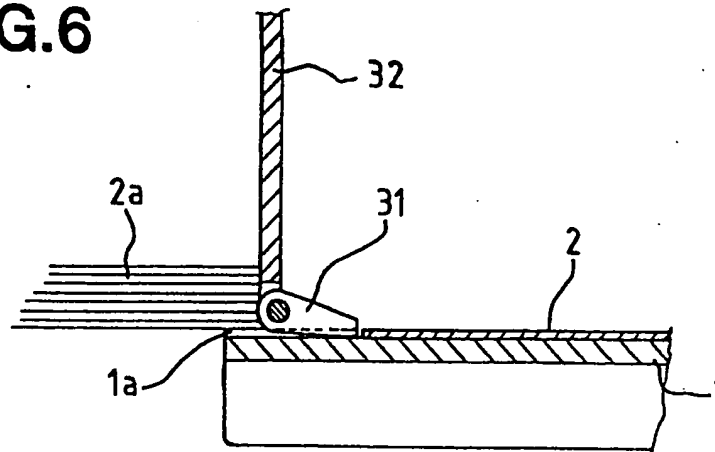
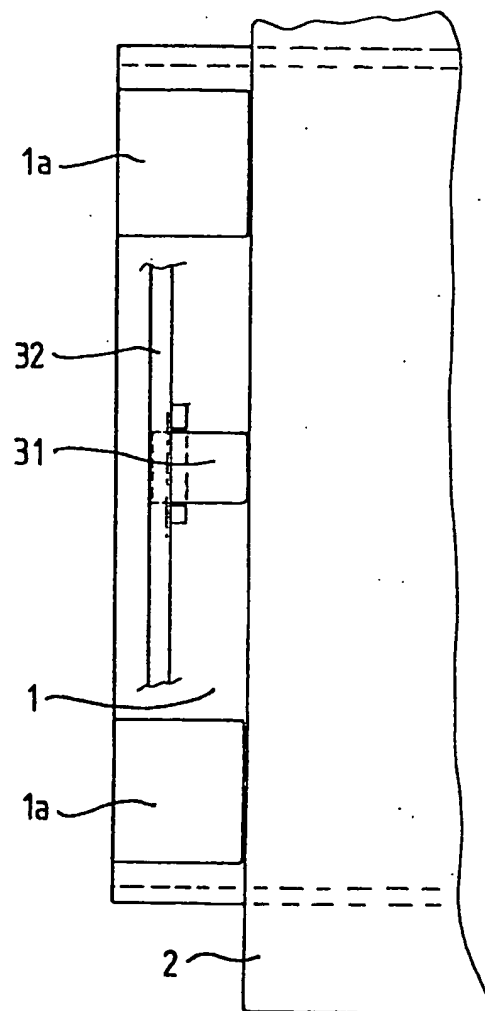


FIG. 7



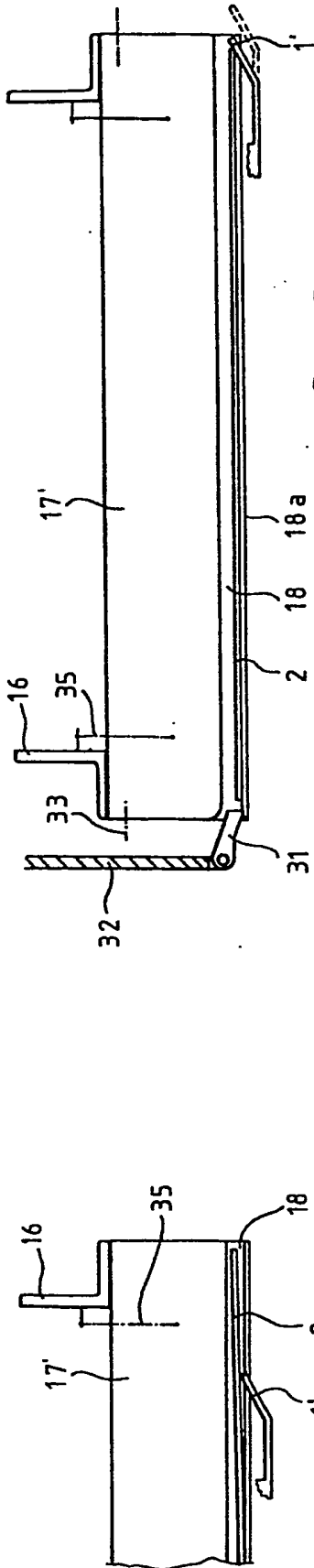


FIG. 10

FIG. 11

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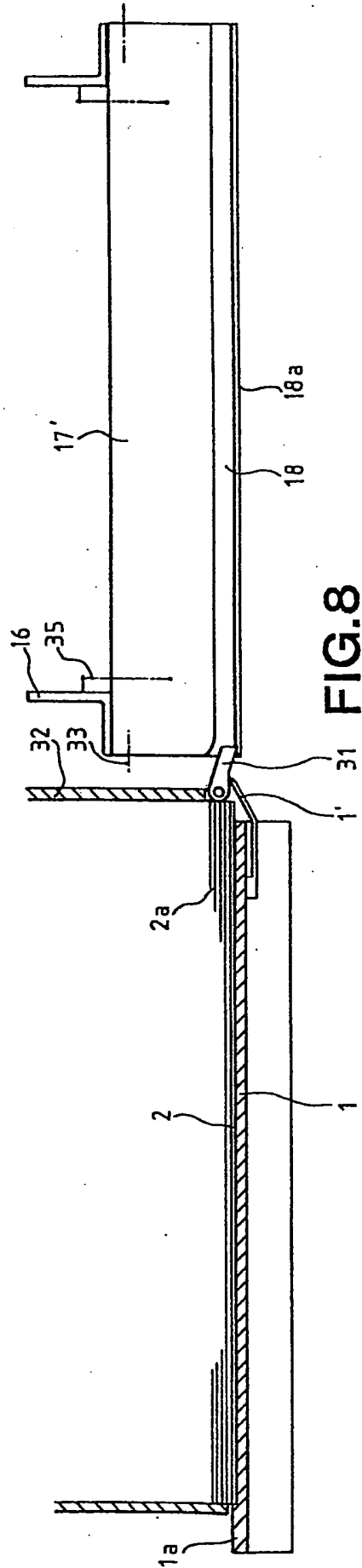


FIG. 8

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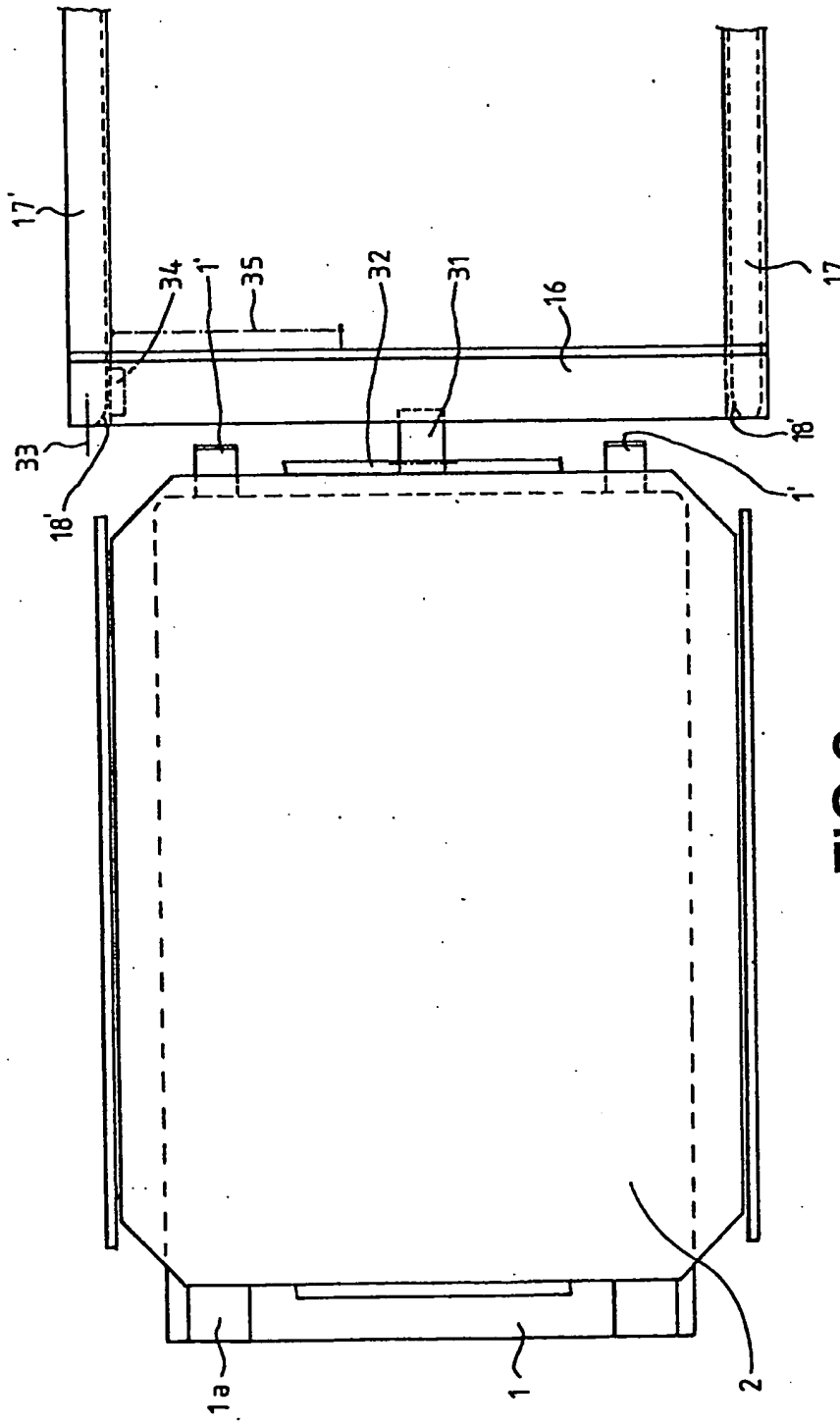
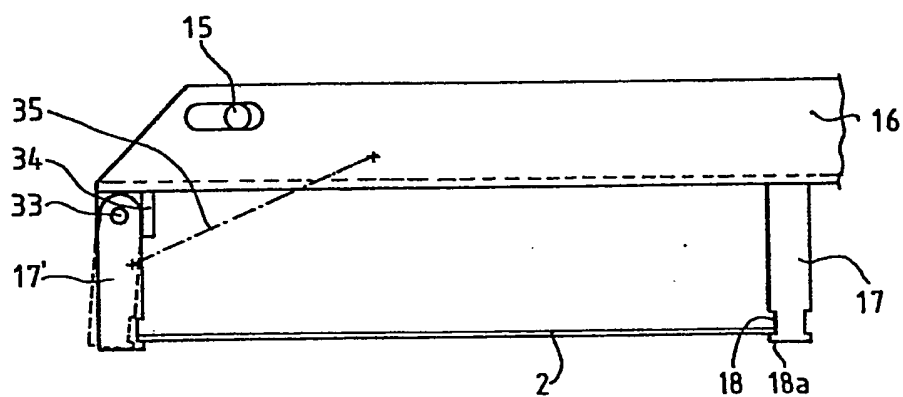


FIG. 9

FIG. 12





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EUROPEAN SEARCH REPORT

0089090
Application number

EP 83 20 0348

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
D,A	US-A-3 583 347 (WHITTEN) * Column 2, line 17 - column 3, line 44; figures 1-7B *	1	B 65 B 7/28

A	US-A-2 974 459 (KINNEY) * Column 1, line 72 - column 2, line 39; figure 1 *	1,8	

D,A	US-A-2 587 180 (LINDSTROM) * Column 7, line 37 - column 8, line 17; column 9, line 4 - column 11, line 41; figures 8-16 *	1,2,8	

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. 7)
			B 65 B
Place of search THE HAGUE		Date of completion of the search 24-06-1983	Examiner CLAEYS H.C.M.
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